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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/687,130	10/12/2000	Robert Alan Cochran	10992807-1	1247

7590   10/01/2003

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EXAMINER
TO, BAOQUOC N

ART UNIT	PAPER NUMBER
2172	

DATE MAILED: 10/01/2003   8

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	09/687,130	COCHRAN ET AL.
	Examiner	Art Unit	
	Baoquoc N To	2172	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____ .

2a) ☐ This action is **FINAL.**   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *13 and 15-19* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☒ Claim(s) *1-12* is/are allowed.

6) ☒ Claim(s) *13 and 15-19* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .

4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____ .

DETAILED ACTION

1.   Claims 1-13 and 15-19 are pending in this application.

Response to Arguments

2.   Applicant's arguments with respect to claim 13 have been considered but are

moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3.   Claims 13 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Carter et al. (US. Patent No. 5,909,540).

Regarding on claim 13, Carter teaches a mass storage device that provides

logical device units to accessing computers, the mass storage device comprising:

A medium for storing data (storage devices e.g., hard disks) (col. 8, lines 20-21);

A data writing device and reading device for writing data to medium and reading

data from the medium (to store and retrieve data to and from the one or more persistent

storage memory devices) (col. 7, lines 10-14);

Memory (memory) (col. 7, lines 8-10) and logic processing components (logical

volumes) (col. 10, lines 20-28); and

A controller that executes (data control program 32a) within a logic processing

component and controls reading and writing of data to and from the memory and to and

from the medium (the data control program 32a can stream data to, and collect the data

from, the shared memory subsystem) (col. 7, lines 27-29), the controller providing, in

addition to execution I/O operations, including execution of read and write operations to

and from logical device units to a mirror object stored on a second logical device unit

(the replication controller for generating a copy, or select number of copies...and storing

the copy in the local persistence memory device of a second computer) (col. 18, lines 3-

8) and a current state metric for each logical device unit that can be requested by an

accessing computer , the controller updating the current state metric for a logical device

unit whenever the controller executes an I/O operation that changes the data (stored file

metadata, such as the file time stamps and file size, can be updated quite frequently,

making the metadata update more expensive) (col. 10, lines 46-49), stored on the

medium for storing data copy in the local persistence memory device of a second

computer) (col. 18, lines 3-8), included in the logical device unit's data (logical volumes)

(col. 10, lines 22-25).

Carter does not explicitly teach a current state metric for each logical device unit

that can be request by an accessing computer. However, Carter teaches, "file Inode

update require metadata information in the files'Inode. These attributes may include the

time stamps, file flags and the end of file mark. Attributes may be updated directly by

various set file attributes operations or as in the case of time stamps" (col. 35, lines 45-59- 63 49). In addition, Carter also teaches, "the file system metadata updates that span multiples pages includes entry updates, such as create file or directory, delete file or directory, and rename file or directory, file set updates" (col. 35, lines 59-63). This teaches the accessing the time stamps in the file system for updating, is requesting a current state metric as claimed. Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention was made to request the time stamp for updating as taught in Carter would allow the restoration of files from the backup when system failure.

Regarding on claim 15, Carter teaches 1/O operations directed to a logical device unit that enables maintenance of a current state metric for the logical device unit and disables maintenance of a current state metric for the logical device unit, and wherein the controller updates the current state metric only when maintenance of a current state metric for the logical device unit is enabled (col. 5, lines 50-55).

Regarding on claim 16, Carter teaches the current state metric is a timestamp (file time stamps) (col. 10, lines 45-50).

Regarding on claim 17, Carter does not explicitly teach the controller updates the timestamp by saving a current time (col. 10, lines 45-50).

4.   Claims 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Carter et al. (US. Patent No. 5,909,540) in view of Mutalik et al. (US. Patent No.

6,161,111).

Regarding on claim 18, Carter teach the subject matter except for the current

state metric is a counter. However, Mutalik teaches, "as the file map utilization module

143 receives the data from the mass storage sub-system 12, it will store the data in the

buffer pointed to by the buffer provided in the file read command, for later transfer to the

data stored 14, during a backup operation. After the file map utilization module 43 has

received and buffered all of the data, it (that is, the file map utilization module) will

increment the data read counter and decrement the remaining data counter by value

corresponding to the amount of data that has been received and buffered (step 168)

(col. 13, lines 54-67). This teaches state metric is a counter. Therefore, it would have

been obvious to one ordinary skill in the art at the time of the invention was made to

modify timestamps of Mutalik into Carter in order to provide the counter the indication to

restoration of the backup files.

Regarding in claim 19, Carter do not explicitly teach the controller updates the

counter by incrementing the counter. However, Mutalik teaches, "as the file map

utilization module 143 receives the data from the mass storage sub-system 12, it will

store the data in the buffer pointed to by the buffer provided in the file read command,

for later transfer to the data stored 14, during a backup operation. After the file map

utilization module 43 has received and buffered all of the data, it (that is, the file map

utilization module) will increment the data read counter and decrement the remaining

data counter by value corresponding to the amount of data that has been received and

buffered (step 168) (col. 13, lines 54-67). This teaches the counter is incrementing

each time the I/O operation to provide the restoration of files. Therefore, it would have

been obvious to one ordinary skill in the art at the time of the invention was made to

modify timestamps of Mutalik into Carter in order to provide the counter the indication to

restoration of the backup files.

Allowable Subject Matter

5.   Claims 1-12 are allowed over prior arts made of records.

The following is a statement of reasons for the indication of allowable subject

matter: None or prior art single or in combination either teach or suggest

when the object is not currently mirrored to a mass storage device, creating a

mirror for the object on a second logical device unit on a mass storage; when the object

and the mirror for the object are split, resyncing the object with the mirror for the object;

splitting the object and the mirror for the object so that the mirror becomes a backup

copy of the object and so that I/O requests directed to the object are not automatically

directed to the mirror; retrieving a current timestamp from the second logical device and

saving it as a saved timestamp; updating the timestamp upon executing any 1/0

operation directed to the second logical device that alters data stored on the second logical device; when the object is determined to need to be restored from the mirror, retrieving a current timestamp from the second logical device; comparing the retrieved current timestamp to the saved timestamp; when the current timestamp is equal to the saved timestamp, copying the mirror to the first logical device to replace or again create the object on the first logical device.

Conclusion

6.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Mayer   (US. Patent No. 6,009,481)   Patent date: 12/28/1999

Carteau   (US. Patent No. 6,606,694)   Patent date: 08/12/2003

Bleavin et al. (US. Patent No. 6,038,569)   Patent date: 03/14/2000

Gusler et al. (US. Patent No. 6,493,729)   Patent date: 12/10/2002

Contact Information

7.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Baoquoc N. To whose telephone number is (703) 305-1949 or via e-mail BaoquocN.To@uspto.gov. The examiner can normally be reached on Monday-Friday: 8:00 AM – 4:30 PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim Y. Vu can be reached at (703) 305-4393.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231.

The fax numbers for the organization where this application or proceeding is assigned are as follow:

- (703) 746-7238   [After Final Communication}]
- (703) 746-7239   [Official Communication]
- (703) 746-7240   [Non-Official Communication]

Hand-delivered responses should be brought to:

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Arlington, VA 22202

Fourth Floor (Receptionist).

Baoquoc N. To

September 19, 2003

KIM VU
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